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CLAIMS

1. A photo-catalyst containing titanium fluoride nitride comprising, $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$ or a compound represented by $\text{MeTi(IV)O}_a\text{N}_b\text{F}_c$ prepared by doping at least one metal Me selected from the group consisting of alkali or alkaline earth metals on $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$, wherein, b is 0.1 to 1, c is 0.1 to 1 and a is a value to maintain Ti(IV) and is decided in relation to b and c .
2. The photo-catalyst containing titanium fluoride nitride of claim 1 to which at least one promoter selected from the group consisting of Pt, Ni and Pd is loaded.
3. The photo-catalyst containing titanium fluoride nitride of claim 1, wherein $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$ possesses anatase structure and $\text{MeTi(IV)O}_a\text{N}_b\text{F}_c$ possesses perovskite to anatase structure.
4. The photo-catalyst containing titanium fluoride nitride of claim 3 to which at least one promoter selected from the group consisting of Pt, Ni and Pd is loaded.
5. A photo-catalyst for water splitting containing titanium fluoride nitride comprising, $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$ or a compound represented by $\text{MeTi(IV)O}_a\text{N}_b\text{F}_c$ prepared by doping at least one metal Me selected from the group consisting of alkali or alkaline earth metals on $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$, wherein, b is 0.1 to 1, c is 0.1 to 1 and a is a value to maintain Ti(IV) and is decided in relation with b and c .
6. The photo-catalyst for water splitting containing titanium fluoride nitride of claim 5 to which at least one promoter selected from the group consisting of Pt, Ni, Ru and Pd is loaded.
7. The photo-catalyst for water splitting containing titanium fluoride nitride of claim 5, wherein $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$ possesses anatase structure and $\text{MeTi(IV)O}_a\text{N}_b\text{F}_c$ possesses perovskite to anatase structure.

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8. The photo-catalyst for water splitting containing titanium fluoride nitride of claim 7 to which at least one promoter selected from the group consisting of Pt, Ni and Pd is loaded.

9. A method for preparation of a photo-catalyst represented by $\text{Ti(IV)O}_a\text{N}_b\text{F}_c$, wherein, a, b and c are same as to claim 1, by baking titanium di-ammonium fluoride halide represented by $(\text{HH}_4)_2\text{TiF}_d\text{X}_{6-d}$, wherein, d is integer of 1-6, which contains at least F and ammonium halide by the ratio of equimolar or by the ratio of slightly excess of ammonium halide at the maximum temperature from 200°C to 500°C so as to form a starting material, then said starting material is nitrogenated by thermal synthesis in ammonia atmosphere containing from 0.02% to 10.00% of oxygen, air or water to ammonia by reduced mass to oxygen atom at the maximum temperature from 350°C to 700°C for over than 5 hours.

10. A method for preparation of a photo-catalyst represented by $\text{SrTi(IV)O}_a\text{N}_b\text{F}_c$, wherein, a, b and c are same as to claim 1, by baking titanium di-ammonium fluoride halide represented by $\text{TiF}_x\text{X}_{6-x}$ and/or $(\text{HH}_4)_2\text{TiF}_d\text{X}_{6-d}$, wherein, x and d are integer of 1-6, which contains at least F and at least one compound selected from the group consisting of SrO , SrOH and SrX so as to form a starting material or SrTiF_6 , then said starting material or SrTiF_6 is nitrogenated by thermal synthesis in ammonia atmosphere containing from 0.02% to 10.00% of oxygen, air or water to ammonia by reduced mass to oxygen atom at the maximum temperature from 350°C to 700°C for over than 5 hours.